

ON
FUNCTIONAL
DISEASES OF THE LIVER,
ASSOCIATED WITH
UTERINE DERANGEMENT;

EMBRACING THE CONSIDERATION OF
SPECIAL PHYSIOLOGICAL AND PATHOLOGICAL RELATIONS,
HITHERTO UNNOTICED.

BY
BUTLER LANE, M.D., M.R.C.S.E.,
ETC.

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THE publication of the following remarks was a matter of doubt and hesitation, nor would it probably have taken place, had it not been for the encouragement of one who had already been successful in the cultivation of special female pathology, and yet more so in the daring application of science and skill in the department peculiarly his own.

TO FREDERIC BIRD, ESQ. M.D.,

this little Essay is therefore inscribed, as the privileged tribute of long and sincere friendship, by

THE AUTHOR.

Ewell, Surrey,

May, 1848.



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THE
LIVER AND THE UTERUS:
THEIR RELATIONS IN HEALTH AND DISEASE.

THE sympathetic connections of the various organs of the human frame have always afforded much subject for speculation and research. In the more conjectural state of medical science, the influence of sympathy, both extrinsic and intrinsic, was deemed all-pervading; but, in the present age, knowledge has become based on more exact and rigorous data, and physical causation is often made manifest in lieu of the more mysterious coincidence and sequence previously acknowledged. There are, however, certain analogies and relations in vital agency, which, though obvious in their effects, would seem inscrutable in their causation, and which we must feel inclined to attribute primarily, more or less, to special nervine function. These may be characterised by identity or antagonism, in relation to their origin, or, in fact, by their sympathetic or antipathetic type. It is to a connection chiefly of this description, and which, I believe, has hitherto escaped notice, that I am now about to refer.

I have for some years entertained the opinion, that a physiological and pathological relation exists between the liver and the uterus, and it is the object of this essay to demonstrate my views on the subject, and to submit to the consideration of the profession the facts and arguments which

may support the theory. I am confident that this opinion is not one of mere hypothetical deduction, but that it will be borne out by practical results, and that medical experience will speedily recognise the important bearing of the question, and afford it further elucidation.

My attention was first drawn to the subject during my researches into the action of oxide of silver in uterine affections. Menorrhagia* was one of those in which the medicine demonstrated a most beneficial influence, but I soon discovered that, among others, there was one peculiar form of this complaint in which it was powerless, and its use was even attended with disadvantage. From the general constitutional state which I found to exist, I was induced, in several of these cases, to administer mercurial alteratives, and with their sole use I found to my surprise that speedy cessation of the menorrhagic discharge ensued. This having occurred repeatedly, I was induced to make more careful observation, which assured me that the result was one of causation, and not a mere accidental sequence. I found that in such cases a congested and inert state of the liver existed, and on the relief thereof by copious biliary secretion, the more obvious and apparently unallied complaint would disappear.

The research and experience of three years enable me to advance the following propositions :—

1. In a state of health an anatomical and physiological relationship exists in the female between the liver and the uterus.

2. The relationship in question is apt to be disturbed in many forms of disorder and disease, primarily implicating either organ individually.

3. The disturbance in question, though varying much in nature and degree, assumes certain definite aspects, the recognition of which serves much to direct and facilitate our therapeutic appliances.

* By *menorrhagia* I understand an excess in the periodical excretion of uncoagulable sanguineous fluid; irregularity may form an original feature in the complaint. The discharge of coagulable blood is not true menorrhagia, though after a time the disease may assume a hæmorrhagic character, or even become complicated with inflammatory action.

To the observations of that eminent physiologist, Dr. John Reid, the profession is indebted for a series of valuable tables of the respective weights of the different organs of the human frame.* The following one relates to the weight of the liver in the two sexes at various ages, and to the proportion of such weight to that of the entire body. The table in question evidently has an important bearing on the subject under consideration; for it must be admitted as a general rule, in reference to anatomical and physiological connection, that there must be a relation between the amount of normal anatomical development, and the functional power possessed by a structure, whether glandular or muscular, and consequently that the weight of a gland or other organ, in a healthy state, having correspondence with the bulk, it will afford a nearly accurate indication of its functional power and activity.

MALE.			FEMALE.		
AGE.	WEIGHT.	Ratio of the Weight of the Liver to that of the whole body.	AGE.	WEIGHT.	Ratio of the Weight of the Liver to that of the whole body.
Years.	oz. dwts.		Years.	oz. dwts.	
1 to 5	14 6 $\frac{1}{6}$	4 cases, æt. 4, $\frac{1}{21}$ $\frac{2}{9}$ $\frac{3}{4}$	1 to 5	15 8 $\frac{2}{5}$	{ 6 cases, æt. 2 to 4, $\frac{1}{20}$
5 „ 7	17 3	2 cases, æt. 5, $\frac{1}{23}$ $\frac{3}{4}$	5 „ 7	16 13	
7 „ 10	23 3	1 case, æt. 7, $\frac{1}{21}$	7 „ 10	25 0	Æt. 7 to 10, $\frac{1}{22}$ $\frac{1}{4}$
10 „ 13	31 4		10 „ 13	28 8	
13 „ 16	35 8	{ 2 cases, æt. 13 to 15, $\frac{1}{25}$ $\frac{6}{7}$	13 „ 16		
16 „ 20	50 12		16 „ 20	48 4	4 cases, $\frac{1}{30}$ $\frac{5}{10}$
20 „ 25	54 8		20 „ 25	47 8	{ 7 cases, æt. 20 to 30, $\frac{1}{33}$ $\frac{2}{7}$
25 „ 30	50 10 $\frac{2}{7}$	13 cases, $\frac{1}{29}$ $\frac{3}{5}$	25 „ 30	35 15	
30 „ 40	53 9 $\frac{1}{2}$	6 cases, $\frac{1}{35}$ $\frac{1}{2}$	30 „ 40	54 10	
40 „ 50	54 12 $\frac{4}{5}$	11 cases, $\frac{1}{35}$ $\frac{2}{3}$	40 „ 50	43 8	6 cases, $\frac{1}{42}$ $\frac{1}{6}$
50 „ 60	48 9 $\frac{9}{10}$	15 cases, $\frac{1}{35}$ $\frac{1}{2}$	50 „ 60	44 15 $\frac{1}{2}$	
60 „ 70	48 9 $\frac{1}{4}$	3 cases, $\frac{1}{43}$ $\frac{1}{3}$	60 „ 70	48 5	4 cases, $\frac{1}{25}$ $\frac{1}{4}$
70	46 0				

There is not a complete statement of the number of cases on which the above averages are founded, but from the table it is apparent that there is a greater ætal variation in the weight of the liver in the female than in the male subject. Thus the absolute weight of the liver is somewhat greater in the female than in the male up to the period 10—13, when the weight of the male liver is in comparative excess. At the

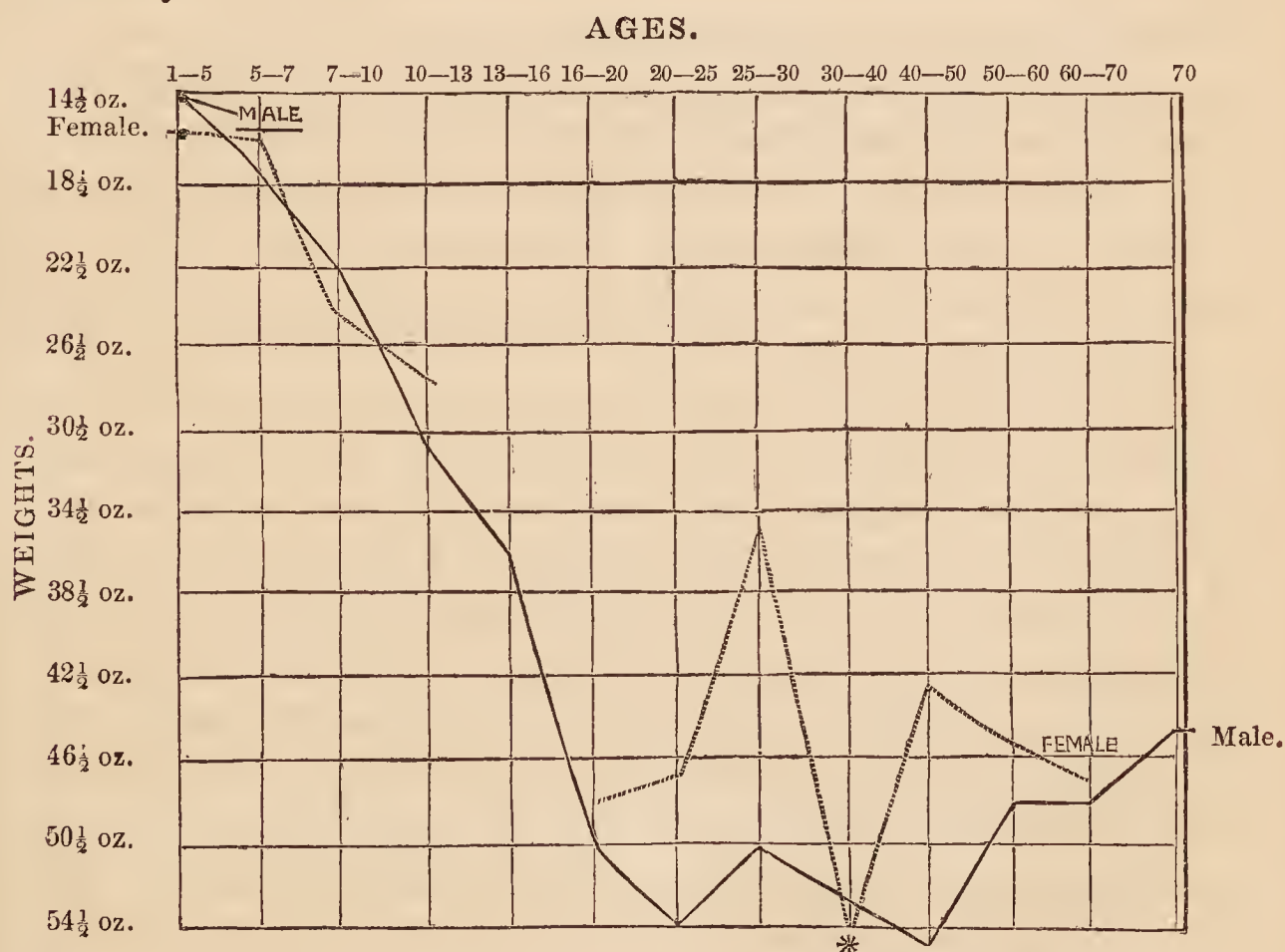
* “London and Edinburgh Monthly Journal,” vol. iii.

age 13—16, there are no means of comparison, the weight of the male liver alone being given, and in that there has been material increase. At the age 16—20, the increase is found to progress, and there is nearly the same difference between the male and the female weights as at the period 10—13. During the period 20—25, a change takes place; the male organ increases in weight materially, while that of the female diminishes, so that the disparity becomes threefold. At the next period, 25—30, the divarication is still greater, although the male liver has become somewhat lighter on the average. Thus, it is evident, that at the ages 16—30, embracing half the period of menstruation and child-bearing, the female liver differs much in its average from that of the male, a fact suggestive of the existence of a compensating medium for the deficient hepatic development in the secretive uterine function, or one which exerts a derivative influence. At the age 30—40, we have a sudden change, the hepatic weight in the female exceeding that in the male; but it appears very doubtful whether a fair ratio of the weight of the female liver is afforded by the table, inasmuch as one example only seems recorded, and the amount given is not intermediate between those of the preceding and succeeding ætal periods, as in the male subject. During the term 40—50, the male liver appears to attain its maximum weight, and the female liver also shows a material increase, so that the disparity of weight between the livers of the two sexes is only about two-thirds what it was at the period 25—30. From the age of 50 equalisation takes place, the weight of the liver increasing in the female, and decreasing in the male. Taking all ages, we find the average weight of the liver materially less in the female than in the male, and the amount of loss accrues between the ages of 16 and 60.

With respect to the weight of the liver relatively to that of the entire body, the irregularity of the statistics scarcely admits our forming a comparison in reference to the two sexes. We may remark, however, that at the early ages the ratio of weight is very similar in the one instance with the other, but at the main period of menstruation and child-bearing, 20—30, the diminution of proportionate hepatic weight on the side of the

female is remarkable. At the epoch 30—40, there is no standard of comparison. Between the ages of 40—50, the ratio of the weight of the female liver undergoes much further diminution, which probably is partially attributable to the embonpoint then apt to occur, as we find that the absolute weight of the female liver is then materially on the increase. At the age of 60 we find that the proportion the weight of the liver bears to that of the entire body in the female is greatly augmented.

I have constructed the following diagram, in order to afford a comparative view of the average weights of the liver in the male and female respectively. As far as the data quoted in the table are available, it serves well to demonstrate the discrepancy of development of the liver in the two sexes, and the peculiar relation thereof in the female to the period of uterine activity.



* As I have already mentioned, I consider the computation of the weight of the female liver at the period of 30—40 totally fallacious, inasmuch as the calculation seems founded on only one case, and bears no proportion to the preceding or succeeding amounts of weight. I should, however, anticipate that, about the age of 40, there might be much variation in the weight of the liver, and that, if menstrual secession were sudden, the bulk and weight of the liver would be liable to abrupt increase.

That much fallacy may be connected with the above tables I am fully aware, and am far from wishing to attach more than their just value to the deductions thence derived. Careful consideration, however, induces me to estimate the deductions in question even more highly than I was first inclined. We know not what diseases occasioned the death of the males and females included in the tables, but, at any rate, many of the diseases to which females are the more liable have decidedly a special tendency to produce congestion of the liver, and consequently enlargement and increase of weight—phthisical, malignant, and puerperal diseases, for example. Males, on the other hand, are more amenable to fever and acute inflammatory disease; and in these the liver, unless specially affected, does not tend to undergo the same congestive influence as in those to which I have alluded as more commonly incidental to females: and though, from the more brief duration of acute disease, there may have been less time for general emaciation, yet the nature of the disease and its necessary treatment will tend to diminish the hepatic bulk rather than otherwise. Moreover, the active life of the male does not tend so much to congestion and enlargement of the liver as the sedentary and inactive habits more prevalent with females. In the class of persons included in the tables in question, it is likely that the prejudice to the liver from the abuse of alcoholic liquids was equal in the two sexes. Thus, therefore, it would seem probable that a morbid increase of the liver is most apt to occur in females, which might somewhat tend to interfere with my calculations. Still, despite this adverse circumstance, as far as the data furnished by the tables are available, the weight of the female liver, both absolutely and proportionately to the entire corporeal weight, is far beneath that of the male. Looking at the two periods when the number of cases affords the most certain means of comparison, we find, at the age of 25—30, the average absolute weight of the male liver is 50 oz. $10\frac{2}{7}$ dwts.— $\frac{1}{25}\frac{3}{5}$ that of the entire body; whereas in the female the average absolute weight is 35 oz. 15 dwts.— $\frac{1}{33}\frac{2}{7}$ of the whole corporeal weight. And again, at 40—50, while the male liver averages 54 oz. $12\frac{1}{5}$ — $\frac{1}{35}\frac{2}{5}$ of the whole weight—that of the female averages 43 oz. 8 dwts., and is in the proportion of

$\frac{1}{4} \frac{1}{2} \frac{1}{6}$; and in these instances the absolute average weights and the relative proportions differ so extensively in the male and female, as to allow a wide margin for any accidental error of calculation.

Let us now examine the relative nature of the secretions of the two organs under consideration. The biliary product is exceedingly complex in its chemical character, but at any rate we may regard it as a peculiar animal substance in combination with soda. It is a product emanating from the portal blood, which, indeed, undergoes conversion to a considerable extent. And what is the nature of the portal blood? Simon's experiments on the portal blood of horses, which may, I think, in its relative nature be considered sufficiently analogous to that of the human subject, afford the following results:—1. It is deficient in fibrin as compared with the arterial and venous blood, and what there is of that substance is but imperfectly organised. 2. The blood corpuscles therein are in excess to the extent of 50 per cent. beyond the average of ordinary venous or arterial blood, and at the same time they are imperfect. 3. The portal blood contains fat globules, but no lymph granules. 4. There is an excess of extractive matter and salts. By the comparative examination of blood from the hepatic vein it was evident that the blood underwent a loss of water, fibrin, fat globulin, and colouring matter, and it therefore becomes obvious that these substances must constitute the material whence the biliary secretion is formed.

If, on the other hand, we inquire as to the composition of menstrual fluid, we find, according to Simon and others, that it contains but a minute proportion of fibrin, that the blood corpuscles are in great excess, and that the fat globules on the average are also in excess. It also contains salts in larger proportion, and though the comparison of the blood from the portal and hepatic veins does not, according to the analyses which we possess, show a diminution of saline material in the transit of blood through the liver, yet that may be owing to extractive matters being computed therewith; for looking at the large proportion of soda-salts contained in the bile, there can be little doubt that saline matter is subtracted from the portal blood by the biliary secretion to a considerable extent.

These few observations will, I think, tend to render it manifest that there is some affinity between the menstrual fluid and portal blood, and still more between the menstrual fluid and the material which is subtracted from the portal blood to undergo biliary conversion. If, therefore, I may assume this analogy in the chemical composition of the secretions of the respective organs, it will certainly go some way to demonstrate the possibility and probability of a physiological hepatico-uterine connection.

I may advert to another circumstance, which seems somewhat corroborative of the hypothesis of hepatico-uterine relation. The lungs are acknowledged to sympathise and antagonise in function with the liver to a considerable extent. If, therefore, a physiological and pathological connection exists between the uterus and the liver, it might fairly be expected that the influential relationship would extend from the liver to the lungs. Now such apparently is the case, for the experiments of Andral and Gavarret demonstrate that in woman, at the period of puberty, there is no increase in the amount of carbonic acid which is exhaled; whereas, when age or any other cause puts a stop to menstruation, the exhalation becomes more active. In this example of the unity of the body in health and disease, there is an apparent sequence of cause and effect. We have evidence of the necessity of compensation for the abeyance of the uterine function, and, looking at the proximate and constant influence of the hepatic function on pulmonary action, it is not unfair to regard it as the medium of the uterine influence to which we refer.

I have now to direct attention to a fact which has hitherto escaped the notice of physiologists and pathologists, and which, I believe, assumes an important relation to the subject under consideration. In a great majority of instances it will be found that menstruation rarely occurs without some concomitant alvine derangement. The bowels will vary from their usual state of action, becoming either confined or relaxed relatively to their ordinary condition. Now we know that bile may be considered as the natural stimulus to healthy alvine action; if, therefore, that secretion be increased or diminished, so in pro-

portion will there consequently be increase or diminution in the action of the bowels. Assuming, therefore, the existence of an hepatico-uterine relation, it will follow that when the periodical excitement of the uterus takes place, occasioning menstruation, then the liver will manifest some sympathetic influence. If the action should be simply derivative, the biliary secretion will be diminished, and the natural catharsis will consequently be lessened. But if a greater degree of excitement attend the menstrual period, the liver may even be supposed to undergo a sympathetic degree of excitement or erethism, and its secretion being thereby augmented, instead of being diminished, increased catharsis will consequently result. It is also to be remembered that there is an immediate connection between the veins of the uterus and the portal system, which must exert some influence. The uterine blood, however, when subjected to its own special secretive action is purified by that very process, and consequently it does not in that respect need the hepatic elaboration ; it is unlike the intestinal blood, which is impoverished by furnishing pabulum for the secretions, and deteriorated by the admixture of foreign matter imbibed by venous absorption.

In some instances, certainly, intestinal irritation will cause uterine excitement, and on the other hand I can conceive that uterine excitement may implicate the intestinal canal ; but I cannot understand how uterine excitement is as a general rule to diminish the normal irritability of the intestines, and the cathartic action thereon contingent, unless it be through the medium of hepatic influence. It seems at first sight rather irrational to consider the secretion from the portal venous system as antagonised by that from the arterial uterine system ; but we must remember, that during the menstrual period, a complete temporary revolution takes place in the female constitution, which indeed is often very perceptible at its outset. In such cases languor and oppression are experienced, the pulse is accelerated, the countenance becomes sallow and almost jaundiced, a peculiar faint odour emanates with the breath and from the cutaneous surface, and only on the establishment of the uterine flux do these symptoms subside. I believe that at the approach of the uterine excite-

ment the function of the liver is performed imperfectly, the process of purification therein effected is incomplete, and the supplementary respiratory action, though often much excited, is inadequate to the task. Thus the arterial blood circulating through the system is to some extent impure; this very impurity is the essence of the peculiar constitutional state that exists, and it is by means of the uterine secretion that the blood undergoes the necessary process of filtration and separation, by which the system becomes relieved. Chlorosis has often been regarded as an hepatic affection, but it is only by adopting the above views that the assumption admits of explanation.

For the above reasons, and other practical ones which I shall hereafter detail, I am induced to believe that a constipated or relaxed state of bowels during menstruation depends for the most part on hepatico-uterine relation, and I will now refer to a summary of 100 cases in which I have ascertained the peculiar alvine state at that period. Of 100 females in good average health, 22 acknowledged no change in the action of the bowels during menstruation, though in many of them it is probable there was some slight variation from the usual state, inasmuch as the answer returned to my inquiry was often, that the person had "*not noticed*," or was "*not aware*," of any difference in the action of the bowels at those times; in 45 instances comparative constipation was declared to exist during menstruation; and in 33 cases there was relaxation of the bowels in comparison to the usual wont, but in about half these cases there was more or less dysmenorrhœa, whereas, in the females otherwise categorised the complaint rarely existed. Thus it seemed that any undue uterine excitement or irritation tends to cause relaxation of the bowels during menstruation; and this was countenanced by reference to some cases of special female diseases, uterine tumours, &c., which Dr. Frederic Bird kindly permitted me to make note of; out of 20 consecutive cases I found the bowels were unaffected at menstruation in 4 instances, constipated in 2, and relaxed in no less than 14.

I am therefore inclined to believe that constipation, to a greater or less extent, most commonly coincides with menstru-

ation when the uterus is in a healthy condition, its function exerting a derivative influence in reference to the liver. On the other hand, if congestion of the liver be consentaneous with the period of uterine congestion, spontaneous biliary secretion, simultaneous with the menstrual flow, may afford relief; but if there be a still higher degree of hepatic congestion, it may occasion mucous diarrhœa, as it is known to do on other occasions, and that more especially if the irritative influence of dysmenorrhœa be present. Such I believe to be causes of the occurrence of diarrhœa during menstruation, and, as a general rule, I consider it indicative of a morbid tendency. It will, however, require much more extended experience to confirm or contradict the theory which I have advanced, and the subject is well worthy inquiry in the extended field of hospital practice.

Having thus far endeavoured to demonstrate the existence of a physiological connection between the liver and the uterus, I shall now enter into the consideration of the pathological relation which, if my hypothesis be correct, must consequently obtain. This is the practical side of the question, and should afford a synthetic correspondence with the analytical inquiry in which we were first engaged. The theory now advanced is novel to such an extent as to require the collection and examination of a large number of isolated facts. It must therefore be expected that my arguments will be somewhat imperfect and desultory, and that my views will require the further aid of experience for their confirmation or amendment.

It is an opinion of the present day, "*that the general health of the female does not depend on the operation of menstruation.*"* This assumption is based on the exceptional fact that health has been maintained when menstruation has never occurred, but the argument on which the hypothesis is founded seems to me totally untenable. Cases where the ovaries and uterus are wanting, or where even the former important organs alone are deficient, or have been removed by

* Fox on Chlorosis, p. 42.

operation, can have no bearing on the subject; for where the physical attributes of the female sex are absent, the physiological and pathological states therewith connected cannot be expected to present themselves. The menstrual fluid, it is true, is a mere modification of the blood, and includes nothing noxious in its composition; still, for the reasons already assigned, I consider the due excretion of the fluid of the highest importance to female health, and that it exerts a decided influence on the general constitution.

Admitting a physiological hepatico-uterine relation to exist, it may to a certain extent be expected that any morbid condition of either organ will tend to elicit a corresponding morbid state in the other. That such morbid state should in all instances actually occur, is not however to be expected. Acute disease of the skin will often implicate the lungs, causing them to assume a morbid state, and *vice versâ*; here there is an undoubted occasional pathological connection, as well as a constant physiological relation, but still a simple morbid state of either organ is of the more common occurrence. So it is in reference to the liver and the uterus—either may assume an individual morbid condition; if the one organ be affected, the other will have a tendency to become implicated, a tendency merely for the most part, inasmuch as it is not realised in the majority of instances. Moreover, it is mostly while the uterus is in a state of activity, *i. e.*, at or near the menstrual period, and also occasionally during child-bearing, that complications originate, though, when once established, they may maintain a further existence, and even become permanent.

The hepatico-uterine relation, though unobvious in health, may become strongly evinced in disease. Uterine disorder often seems unaccountable in its origin. No maladies are more empirically treated; but, if we cease to believe them necessarily idiopathic, and trace back their course of causation in accordance with the principles I am now advocating, I am confident that these annoying, and often intractable complaints, may often be much more satisfactorily appreciated, and readily remedied.

The compound hepatico-uterine affections most commonly

assume the guise of disorder rather than that of disease, that is, mere functional derangement constitutes the great bulk of the morbid states in question. Organic mischief may finally result, but the balance of function will undergo long and serious disturbance ere such will take place.

At the two ætal periods, viz., that of menstrual establishment and that of the functional secession, I consider that a modifying change of the hepatic function must take place, readily assuming a morbid character on the supervention of any exciting cause, whether stimulant or sedative in its nature. Such morbid occasions may be recognised, and are consequently often capable of the avoidance so desirable. Even at the ordinary menstrual periods, many of the symptomatic indications are referrible to hepatic derangement, and where dysmenorrhœa exists, what can be more common than headache, vomiting, or diarrhœa, in apparent connection with bilious affection? The converse is also the case, though not quite so obviously, but I hope presently to illustrate the matter more clearly.

We may readily anticipate that when the organs in question are associated in morbid action, the respective degrees of functional excitement or depression will afford the best basis for the classification of such special compound maladies. While, on the one hand, the two organs may undergo consensual excitement, increasing their secretive activity, they may on the other hand be rendered equally amenable to a depressing influence, and a simultaneous arrest of secretion, more or less complete, may ensue. And, again, in lieu of such sympathetic process, antagonistic morbid action may obtain: the secretive function of the liver may be in excess, while that of the uterus is diminished, even unto total abeyance; or, on the other hand, biliary action may be deficient while the uterine function is menorrhagic in its character.

In the examination of the various hepatico-uterine morbid states, I shall consider the uterus as bearing a subordinate relationship to the liver, but, in addition to the action which thus obtains, we have of course a corresponding reaction, uterine disorder extending its influence to the hepatic function. It will therefore be desirable to classify the various disorders

in question, in accordance with their more obvious characteristics, describing briefly the various morbid conditions comprised under each category. Taking the liver as the primary *locus mali*, we may distinguish the following states :—

- | | | |
|---------------------------------------|----|--|
| 1. The action of the liver in excess. | { | a. The secretive action of the uterus in excess. |
| | b. | Do. do. do. deficient. |
| 2. The action of the liver deficient. | { | a. The secretive action of the uterus deficient. |
| | b. | Do. do. do. in excess. |

1 a. It rarely occurs that the natural secretions of the liver and the uterus are consentaneously in excess, and when such is the case, it chiefly originates in the course of other diseases, and not unfrequently it is the result of undue medicinal influence. It is indicative of high irritability, and usually occurs in greatly debilitated constitutions. I have at this time under my care two patients affected with organic disease of the heart, in whom the morbid state in question is often manifest, menorrhagia becoming concomitant with bilious diarrhoea. On two occasions mercurial action appeared instrumental in producing the mischief, and in the treatment of cases with a tendency to menorrhagia, I have often found reason to remember the evil which might result from the effect of mercury, and when circumstances rendered that medicine desirable, I have found it necessary to administer it with the utmost caution, and in combination with appropriate anodynes and tonics ; and that such is usually the case, I feel sure the experience of medical men in general will confirm. We might anticipate that the morbid state in question would be of rare occurrence, for if the balance of the two secretions be disturbed, we might naturally expect, that while the one was in excess, the other would be deficient, rather than that both should assume the *plus* character. And, again, if the liver implicate the uterus in its irritative state, each organ will tend to assume an individual morbid condition. Thus secretive error on the one hand may be counterbalanced by nutritive lesion on the other, tending to organic change, rather than being confined to mere functional derangement ; and this principle is manifest in other hepatico-uterine affections. The following case will, however, serve to illustrate the form of complaint under consideration :—

CASE.—Mrs. J., æt. 33, the mother of four children, had been suffering for two months at intervals with menorrhagia, and there was still uterine discharge when she came under my care. The menorrhagia had been accompanied by many dyspeptic symptoms, which, in spite of medical treatment, had gradually become much exasperated, assuming finally the character of severe bilious affection, characterised by much pain and tenderness in the abdomen (especially the right hypochondrium), in the back, the hips, and the fore part of the thighs; there was incessant vomiting of bilious matter, and slight obstipation, the bowels, when got to act, affording copious, dark, and very offensive dejections; the urine was scanty, and at times almost suppressed; the tongue was loaded with yellowish-white fur; the pulse weak, and about 90, was of somewhat jerking and suppressed character. When I saw her she was in a state of considerable prostration from the continuance of intense pain and incessant vomiting during some hours. The treatment consisted in the application of sinapisms, and the administration of effervescing draughts, with ammonia and hydrocyanic acid, and the bowels were freely unloaded by means of pills of extract of colocynth and hyoscyamus. Thus she was much relieved, the pain and sickness subsiding, the tongue becoming cleaner, and the evacuations gradually assuming a healthy character. The menorrhagic discharge quickly disappeared. There was great debility. After 48 hours infusion of rhubarb, ammonia and hydrocyanic acid were ordered, and seemed to agree well. After the lapse of two days the pulse again became somewhat irritable, there was slight recurrence of pain, and the bowels were somewhat relaxed. A little hydrarg. cum cret., combined with hyoscyamus, was then ordered for two nights, with the object of correcting the vitiated biliary secretion. Very great improvement took place in every respect, but, from the sensations experienced by the patient, she feared the recurrence of the menorrhagia. The oxide of silver was then ordered, half a grain twice a day, with the occasional addition of a mild aperient. Under this treatment she was restored to better health than she had enjoyed for a length of time, and menstruation did not recur until a month subsequently to the time

calculated on, and then in moderation, and without inconvenience; probably, the uterine irritation being subdued, the debilitated constitution gladly availed itself of a respite from the periodic secretive exertion.

The treatment of combined functional excitement of the liver and the uterus should usually accord with that detailed in the foregoing case. A soothing plan is essential, and hyoscyamus, conium, and hydrocyanic acid are most useful, especially the last mentioned, in combination with soda or ammonia, when the stomach is irritable. Depletion is rarely requisite, but mild counter-irritation is often desirable. The free evacuation of the morbid alvine secretions, and the promotion of the digestive functions, are necessary, and when this hepatico-uterine excitement prevails, either as the essence of a disease or a mere morbid element, no remedy will be found of greater value than the oxide of silver when judiciously administered. The diet and exercise require to be carefully regulated, and the tepid and cold douche or shower bath are important adjuncts to the tonic portion of the treatment.

1 *b*. An excited condition of the hepatic secretion, with deficient uterine action, is not an unfrequent occurrence in medical experience at the period of menstrual secession. We find that bilious diarrhœa will often prevent or delay the appearance of menstruation, and that function may even be arrested, should diarrhœa originate during the period. The medicinal influence of mercury will often afford us analogous examples, for I have often seen calomel or blue pill injudiciously taken during menstruation completely arrest the uterine secretion, contrasting with those cases already alluded to, in which mercury excites simultaneously the secretive action of both liver and uterus, but not unfrequently alternating therewith. I have lately seen an instance of the morbid condition in question, occurring in a female *æt.* 40, in whom there was much enlargement and morbid action of the liver. She was subject to occasional diarrhœa, attended with the discharge of large quantities of dark oily bile; and when this happened near the menstrual period it would always delay, and even partially supersede, the uterine secretion. The state in question is, however, much more often an occasional feature

of disease than a morbid state—*per se*—unless perhaps we may except a peculiar form of chlorosis to which I am about to allude.

In our treatment we have to allay hepatic excitement, and the vitiated state of the biliary secretion often necessitates an alterative mercurial action. Warm aloetic purgatives, the hip bath, and even the abstraction of blood by leeches, if much uterine congestion is apparent, may be made available.

In many of the worst chlorotic cases there are often dark and copious alvine evacuations, exceedingly offensive, and presenting the appearance of decomposed animal matter, rather than a true fæcal character. In these cases we must remember that the composition of the blood is in a high degree faulty and deficient; there is found especially a lack of blood globules. Is it not, therefore, rational to suppose that much of the solid constituents of the blood is carried off by the morbidly excited hepatic and intestinal action? Let us trace the history of a chlorotic case of this description. Puberty is at hand; the entire system is in a state of irritable excitement; an abnormal sedative impression or exhausting influence, originating in diet, temperature, atmospheric vicissitude, or some moral shock, interferes with the functional development, the constitutional phasis fails in accomplishment, and the liver assumes an abnormal activity; with this the bowels sympathise, and the morbid condition often extends to the gastric functions, giving rise to those unnatural appetites which seem so strange and inexplicable. Thus it is apparent that chlorosis is in close connexion with imperfect uterine development, though not immediately dependent on the mere non-occurrence or retention of the menstrual secretion, and it will be evident that such a disease will require a widely different treatment from the pseudo-chlorotic condition which originates in tardy constitutional development. The following case illustrates my meaning:—

CASE.—S. L., æt. 17, had never menstruated; her complexion was livid, with occasional hectic flushes. She complained of much pain in the head, back, and limbs. There

was palpitation of the heart, with weak rapid pulse, and the legs were œdematous. The appetite had completely failed, and there was extreme debility. The evacuations from the bowels were relaxed, and always, whether under the influence of steel or not, presented a dark appearance and a peculiar pitchy consistency. A lengthened course of chalybeate, tonic, and anodyne treatment, with strychnine, effected a cure, and on menstruation being established, and the administration of steel being discontinued, the fæces assumed a natural ochre tint. The use of the smallest doses of mercury was decidedly disadvantageous in this case. I may remark that digestive derangement will be found antecedent to all other symptoms in cases of true chlorosis, which favours the supposition that hepatic disorder is closely connected with the causation of the malady.

2 a. The morbid condition indicated under this head comprehends a deficiency of secretive action, both hepatic and uterine. The most perfect and simple manifestation is in one of the forms of chlorosis, which might be named *Chlorosis pallida*, in contradistinction to the more intense form of disease which I have already alluded to, and which might be designated as *Chlorosis livida*. The milder species of chlorosis which I am referring to, probably connected with imperfect development, confines its manifestation to a deficiency of functional action, the hepatic secretion becoming suspended, while the uterine action is yet in abeyance. This may be connected in some measure with imperfect sanguification, though without any serious constitutional mischief.

CASE.—In the case of C. C., a fine, well-grown girl, of fair complexion, æt. 16½, who had never menstruated, the countenance was unnaturally pallid, much pain was complained of in the head and back, and there was great lassitude. The action of the bowels was regular, but for some time previous the motions had resembled light-coloured clay. Aloetics, with an occasional mercurial, and subsequently iron, with attention to diet and regimen, effected the cure in a few months, and, on the establishment of menstruation, the fæcal evacuations at the same time assumed a normal character, becoming permanently of a naturally dark colour.

I am acquainted with a large family, all the female members of which suffer much with imperfect and irregular menstruation, and also with costiveness and deficient biliary secretion; one of them has lately been much troubled with irritable heart and general œdema, though apparently there is no organic lesion. It is curious that the male members of the family, on the other hand, are not at all of a costive habit of body.

The morbid state we are now referring to is very commonly exemplified in the following instance:—

CASE.—Mrs. P., æt. 46, had for a month been suffering with sore throat, cough, and pain at the chest; she also complained of frontal headache. The bowels were costive, and, though aperients had been taken, were never comfortably relieved, the motions being scybalous and clay-coloured. The tongue was pale, with enlarged papillæ; the pulse rather strong, but oppressed; the urine scanty and high coloured. There had been very slight uterine discharge during a week or two, and previously the occurrence of menstruation had been somewhat irregular. An alkaline saline aperient was ordered at intervals, and a combination of mercurial pill and that of compound rhubarb to be taken each night. The diet was to be simple, and no malt liquor to be taken. By persisting in this treatment the patient was speedily relieved; the action of the bowels became free and natural in every respect; the slight uterine discharge disappeared for the time, but menstruation occurred in the course of a fortnight in a natural manner.

In some instances, where amenorrhœa is more or less complete, diarrhœa (mucous, not bilious) will come on with or without spasm at the menstrual period, and in these cases mercury is a most valuable remedy; a single dose will often arrest the diarrhœa, and restore the due biliary secretion, and its further judicious administration will conduce much to the re-establishment of the natural uterine function.

CASE.—Mrs. R., æt. 33, caught cold in the summer of 1847, and for three months subsequently menstruation had been scanty, almost to suppression. At the third period she became very unwell; the bowels were somewhat relaxed, the motions being clay-coloured. The tongue was white, and the

complexion sallow. Violent spasmodic pain occurred frequently in the epigastrium and right hypochondrium at frequent intervals, and there was much tenderness in those parts of the abdomen. No febrile action was manifest. Copious draughts of warm water were ordered, and subsequently two grains of calomel and one grain of opium every hour. Six doses were taken before the pain and tenderness were effectually abated. The bowels not then acting, a cathartic and carminative mixture was prescribed, which effected the evacuation of several copious bilious stools, and afforded great relief. A lengthened course of aloetics with steel, and occasional mercurial doses, re-established the periodical uterine action, and confirmed the general health.

The following case also affords a good exemplification of the connection of the liver and the uterus in their morbid states, and shows that acute affection of the latter organ may be contingent on hepatic derangement.

CASE.—Mrs. M., aged 46, had been much in warm climates, and had suffered severely with liver affection, though latterly in the enjoyment of ordinary health. I found that she had been indisposed some days prior to my seeing her; menstruation had occurred three days previously, but had continued scantily during only twenty-four hours, though on the former occasion it had lasted three or four days, as usual. She complained of much tenderness and occasional pain across the lower part of the abdomen, and also in the lumbar and sacral regions; the pain also extended down the inside of the thighs, where there was slight erythemic eruption. There was a sense of bearing down, much abdominal fulness, and slight nausea. There were unequivocal signs of uterine derangement, and even an inflammatory state might be supposed to exist. On further inquiry, however, the alvine excretions were found scanty, unnatural in colour, and scybulous. There was frontal headache, the sleep had been much disturbed, and the tongue was yellowish and clammy, and the taste in the mouth nauseous. The hands and feet were cold, and flushes of heat and chill, but not rigors, were experienced. There was a jaundiced tint of the entire cutaneous surface, and a peculiar sluggish oppressed state of pulse, especially

indicative of hepatic congestion and inaction. Feeling convinced that the original morbid state was connected with the liver, I prescribed Pil. Hydrarg., gr. v.; Extract Hyoscyam., gr. iij., to be taken at bedtime, with a simple alkaline saline, which was to be repeated in the morning. The next day I found my patient greatly relieved. She had enjoyed a good night's rest; the pain in the back and lower part of the abdomen had disappeared; the tongue was cleaner, and the pulse had become free. The bowels had been gently evacuated of much morbid matter, and the urinary secretion had been copious, though somewhat dark. She now experienced some aching pain in the right shoulder, and uneasiness in the epigastrium and right hypochondrium. A warm bath was ordered, and the pills to be repeated at bedtime, with a mild aperient draught the following morning. Effectual relief was thus afforded.

The cases which I have narrated pretty well serve to indicate the line of treatment which I advocate in the form of hepatico-uterine disorder under consideration. To excite the biliary action is first required, and for this purpose mercury must be resorted to, in a mild alterative form, in all chronic and subacute cases, though more freely in those acute in their nature. The establishment of biliary secretion will usually induce the uterus to assume its normal relationship, though in some instances counter-irritation to the lower part of the spine, warm hip-baths, and anodynes may be required, and in others a subsequent resort to cathartic and tonic treatment. When the morbid symptoms are very acute, threatening inflammatory action, which in the first instance is rare, stricter antiphlogistic measures may become requisite.

2 *b*. The combination of deficient action of the liver with excessive uterine secretion is very easily recognised, and usually readily remedied by acting in accordance with the principles which I advocate, as the following cases clearly illustrate:—

CASE.—Mrs. H., æt. 38, pale and exsanguineous, suffered much with flatulency and debility. There was violent palpitation of the heart on the slightest exertion, and she appeared to derive no benefit from the food she took. The

bowels were costive. Six weeks previously she had miscarried, at the middle period of pregnancy, which had happened twice previously at earlier periods. There had been constant uterine discharge, more or less sanguineous, ever since the last miscarriage. The imperfect digestive action seemed to indicate torpor of the liver. She was therefore ordered two pills of mercurial pill, extract of rhubarb, and ipecac., at bed-time, and a compound senna draught the following morning. The alterative and aperient action was attended with immediate improvement, and the speedy cessation of uterine discharge. This was a patient of my friend Mr. Allan, of Epsom.

CASE.—Mrs. S., æt. 38, menstruated at somewhat irregular intervals, which never exceeded three weeks, the discharge being profuse, but not coagulable. There was much consequent lassitude and debility. The alvine condition was uncertain, being sometimes somewhat confined, and sometimes equally relaxed, but the evacuations never presented a natural appearance, being usually light coloured. The bowels, however, were exceedingly irritable, and the smallest aperient doses were badly borne, a couple of grains of rhubarb even often acting powerfully. Slight alterative doses of hydrarg. c. creta with hyoscyamus were prescribed, and by their administration during two or three periods the undue uterine secretion was readily and permanently controlled.

CASE.—Mrs. K., æt. 30, had been confined more than a month. Anxiety and watching on account of her sick infant had depressed her strength materially. The milk failed, and the uterine discharge, which had previously ceased, reappeared abundantly and of bright colour. There was occasional febrile action, with thirst and nausea, and some abdominal pain, especially in the epigastrium and right hypochondrium. The motions were relaxed, but of light colour. Attributing the state in question chiefly to debility, I gave a mild aperient, which gave a little relief, and subsequently quinine with sulphuric acid, which did not agree at all. Such being the case, and recognising hepatic inaction, I ordered a few mild mercurial doses, with simple effervescing draughts. The relief afforded was rapid and striking. The motions

altered in their colour, bile being abundantly secreted. All the unpleasant symptoms subsided, and the uterine discharge materially abated, even *within a few hours*. A continuance of mild alteratives, with calumba and ammonia, restored the original health of the patient.

From the practical instances detailed, it is apparent that I consider the judicious administration of mercurials as most efficient in the morbid state we have been considering. The combination of mild anodynes may be desirable, and tonics may subsequently be requisite—quinine, however, is seldom available either in this or the preceding class of cases; but calumba and cascarilla, or even steel, may be resorted to, and the oxide of silver is often very useful, more especially when the menorrhagia and uterine irritation persist after the biliary action has been established.

In conclusion I shall now offer a few general remarks on the further manifestation of the hepatico-uterine function. Much might be said respecting idiopathic uterine affections, and the special influence of the oxide of silver therein, but I have already treated thereof elsewhere, and trust that the value of the remedy is to some extent appreciated.

That a connection exists between the uterus and the rest of the system has often been assumed, but I am not aware that hitherto any attempt has ever been made to trace and define it. Dr. Todd, in his Croonian Lectures for 1843, has pointed out that rheumatism often occurs in connection with uterine inaction, which he supposes occasions the peculiar *materies morbi* to accumulate in the blood. I have often noticed in a clay district, where the atmosphere was peculiarly cold and damp, that rheumatic fever was of common occurrence in young females, more so than in males of the same age. The complaint almost invariably took its origin after menstrual suppression, and the recurrence of the function would mark an early period of convalescence. In some measure I consider we may certainly regard the amenorrhœa and the rheumatic fever in the light of cause and effect, for if we assume that the unduly fibrinous state of blood, which is a predisposing cause of rheumatic fever, would also

materially interfere with the uterine secretion, then the total suppression of the discharge might very probably be the signal or exciting cause for the establishment of the special febrile action.

Dr. Evory Kennedy has remarked that “*an engorged state of the uterus is very liable to alternate with, translate to, or co-exist with, congestion of the liver and the spleen;*” but he does not attempt any explanation thereof. The opinion in question, which is the very germ of my hypothesis, will, I doubt not, be readily admitted; but how often must illustrations of the fact have passed unchallenged beneath the inspection of medical men. I have note of numerous cases of complicated malady, too lengthy for insertion here, in which the variation of hepatico-uterine condition afforded decided and satisfactory indications for treatment, which would otherwise have occasioned no little doubt and perplexity, whereas the recognition of the peculiar symptoms enabled me, on more than one occasion, to afford relief, where others had completely failed. The following simple case affords a good illustration of the mutual influence of the liver and the uterus.

CASE.—Mrs. T., æt. 45, a stout phlethoric woman, complained of general malaise, hot flushes, heat of skin and constant pain and tenderness in the left hypochondrium. The pulse was suppressed, but full; tongue clean, but clammy; some thirst; deficient appetite. There was no sickness, and the bowels were regular. Menstruation occurred profusely at intervals of a fortnight, the discharge being clotted, and often lasting a week or ten days. The abstraction of blood seemed desirable, but she had suffered so much from venesection two or three years back, that she objected strongly thereto. An alkaline saline with sp. æth. nitros. was prescribed, but it rendered the menstruation, then just occurring, even more excessive than usual, occasioning much general constitutional distress, and a feeling of extreme debility. In the hope that a diversion of the irritative excitement to the liver might be advantageous, I then prescribed five grains of blue pill. With this the bowels acted most copiously, the dejections being of bilious character, and occasioning a burning stinging sensation in their passage through the rectum. *The*

uterine secretion was arrested within a few hours of taking the pill, though less than a week from its commencement. Saline aperients were continued daily, and in about ten days another mercurial dose was administered with the same effect as before. This treatment gave much relief to all the symptoms, and to my patient's great surprise menstruation did not recur until a month had elapsed, and then but in moderation.

I have often noticed common cases of digestive derangement accompanied with febrile action, occurring in females about the menstrual period, and have been much struck with the marked alteration which would speedily ensue in the general appearance and constitutional state on the menstrual secretion taking place, the uterine action appearing to compensate for the imperfect action of the liver. The period would pass on its natural course, and the morbid symptoms would so long remain in abeyance, but at its cessation febrile action would again become manifest with general excitement of the system, until such time as the deficient biliary secretion should be naturally or artificially restored. The experience of any medical man will, I think, readily afford him instances of this peculiar vicarious uterine influence, and very slight observation will convince him that biliary derangement in females is more apt to occur at or near the menstrual period than at any other time.

According to the views which I have advanced, it should obtain, that in the female sex menstrual derangement will incline to hepatic affection, and the scrutiny of experience will, I think, support this hypothesis. Take the majority of attacks of acute liver disease occurring in females, and we shall find that menstruation has been irregular and insufficient for some prior length of time. This may be exemplified as follows:—

CASE.—Miss E. H., æt. 23, suffered, in common with the rest of her family, with epidemic catarrh, indicated by cough, pain in the limbs, sore throat, headache, &c.; her attack did not, however, take the same course as with the other members of the household. Pain in the right side came on, gradually augmenting. There was much tenderness in the

right hypochondrium and epigastrium, with aching in the back and shoulders. She was affected with constant nausea, and occasional vomiting of dark granular matter. The bowels were costive, the countenance of turbid complexion, and the sclerotics of jaundiced hue. Considerable febrile action of low character was manifest. On inquiry it was found that nearly nine months had elapsed since menstruation had taken place in a normal manner, and of late there had been complete amenorrhœa. The main treatment consisted of free aperients, mercurials, and counter-irritation, and it was effectual in affording relief. Copious dark bilious evacuations were the first indications of amendment. Intestinal ulceration then supervened, indicated by excessive local tenderness, abdominal retraction, and intense pain of cutting, dragging character during cathartic action, so intense indeed as often to occasion syncope. With hot fomentations, slight mercurialisation, opiates, and an occasional dose of castor oil, the cure was finally effected.

Nothing can be more common than to find severe biliary derangement occurring at or about the period of menstrual secession; and looking at the great physiological change which then takes place in connection with hepatic development, it is naturally to be expected. A woman will complain of being bilious, viz., there may be a bitter oily taste in the mouth, a sensation of burning in the throat, frontal headache, nausea, and even vomiting, the urine high coloured, the bile abounding in the alvine dejections, and perhaps causing heat and a stinging sensation in the rectum; the tongue furred, a biliary tinge pervading the cutaneous surface, &c. &c. Such symptoms, or a modification thereof, often mark the great and important vicissitude which takes place in the female economy at the influential epoch in question, and the due appreciation of the symptoms made manifest, their ascription to the real source, and their judicious treatment, medicinal and dietetic, are of the highest consequence to the future welfare of the patient. I suspect that a great majority of those distressing maladies to which the uterus and its appendages become liable in life, might be traced in their origin to neglect and maltreatment at the critical period.

Many of the ailments and inconveniences of pregnancy may also probably be ascribed to the peculiar influence exerted on the hepatic function, and are capable of remedial by attention to that particular. The following is an instance of severe ailment in connection with the pregnant state:—

CASE.—Mrs. B., æt. 35, formerly suffered with menorrhagia, but three months had elapsed without her having experienced uterine action, which she attributed to cold and debility. At about the menstrual period she was seized with violent bilious diarrhœa, accompanied by hæmatemesis and hemorrhage from the bowels, without much febrile action. These symptoms were subdued, but in a fortnight after miscarriage took place, accompanied with violent uterine hemorrhage.

Supposing the biliary function to be more complicated in its relations with females, I should assume that they must be more liable to hepatic disease than males. Dr. Black, of Manchester, in a record of fifty cases of hepatic disease, found that twenty-seven occurred in females, which is somewhat favourable to the supposition. I also think it will be found that very many cases of organic disease of the liver occurring in females, may be traced in their origin to a shock, moral or physical, received during a state of uterine excitement, either menstruation or pregnancy. The following is a remarkable instance of this:—

CASE.—Mrs. A., æt. 36, had enjoyed good health until about five years previous to my seeing her, when, in the seventh month of her pregnancy, she had been much alarmed by the sight of a man who had been seriously injured, and was brought to her house, covered with blood. She was delivered at her full time of a still-born child, which, according to the account I received, presented a bright red colour over the entire surface of the body, as *though masked in blood*. She recovered slowly from her confinement, gradually becoming jaundiced, while, at the same time, serous diarrhœa came on, which had continued more or less up to the period of her coming under my care; the jaundice had also gradually increased. The legs were very œdematous, and the face so likewise at times, with a tendency to embarrassed respira-

tion and cough. The urine was often scanty and high coloured. There was no sickness, but much flatulency, with fulness on the right side of the abdomen, and undue dulness on percussion. Since the commencement of her illness there had been hardly any appearance of menstruation. A mild alterative course afforded some relief, and the administration of the oxide of silver from time to time somewhat served to restrain the diarrhœa. Proceeding, however, from bad to worse, she at length sank into a state of collapse and died. A post-mortem examination showed the gastro-intestinal surface almost healthy, the mucous membrane being merely unduly pale and somewhat thickened. The liver was extensively diseased: it was greatly enlarged in its entire bulk; the right lobe was one mass of dark granular degeneration; the left and spigelian lobes were greatly indurated, and intersected in every direction with dense fibrous tissue. The kidneys and other abdominal viscera were healthy. The ovaries presented a natural appearance, and the uterus was very small, and in all respects more like that of a virgin than of a woman who had borne a child.

The considerations which are advanced in this essay must necessarily to a great extent be theoretical in their character, from the limited data which have been available for my purpose. But even in the present advanced state of the science of medicine and its collateral branches, by far the greater portion of our *art* is still based on hypothetical assumption and empirical appliance. It is not therefore to be expected that I should set forth a continuous chain of exact reasoning in reference to the subject of this essay. I have, however, adduced such facts as have come within my reach, and I have endeavoured to connect them with rational argument, and to support them by reference to the results of experience. I feel that I have not urged the subject with that clearness and comprehensiveness which it deserves, but I am fully convinced that it has an important practical bearing, and trust that it may be deemed worthy of scrutiny and elaboration at the hands of those more equal to the task.